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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/027,514	12/21/2001	John M. Pigott	SC11926ZC	3716

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EXAMINER	
MCCLOUD, RENATA D	

ART UNIT	PAPER NUMBER
2837	

DATE MAILED: 06/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/027,514	PIGOTT ET AL	
	Examiner	Art Unit	
	Renata McCloud	2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 9-20* is/are rejected.

7)☒ Claim(s) *6-8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 18 rejected under 35 U.S.C. 102(b) as being anticipated by Makaran (US 5,744,921).

Claim 18: A method for detecting a stall condition of a motor (Fig. 1: 114) of the type which includes at least first and second coils and a rotor having a plurality of magnetic poles therearound (Fig. 1: 116), said apparatus comprising, alternately driving said first and second coils to with drive signals to cause said rotor to rotate, each of said first and second coils generating emf signals when transitioning from a driven to a non-driven state, said emf signals being caused by movement of said rotor (Col. 5:45-65); integrating the emf signals and monitoring the integrated emf signals to detect a stall condition (Col. 10:45-65).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erdman (US 5,646,491) in view of Makaran (US 5,744,921).

Claims 1 and 9: Erdman teaches a motor (Fig. 1:12) of the type which includes at least first and second coils and a rotor having a plurality of magnetic poles, said apparatus comprising; a generator (Fig. 1: 14) for alternately supplying drive currents to said first and second coils causing the rotor to step, each of said first and second coils generating signals when transitioning from a driven state to a non-driven state, said signals resulting from motion of said rotor; an integrator (Fig. 1:30) having an input coupled to receive said signals and for generating an integrated version thereof; and a comparator (Fig. 1: 36) coupled to said integrator (Fig. 1: 30) for comparing said integrated version with a predetermined threshold (Fig. 1:40). Erdman does not teach comparing the integrated version with a threshold to detect the stall condition. Makaran teaches inputting signals into an integrator, and comparing an integrates version of the signals with a threshold to detect a stall condition (Col. 10:45-65). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the apparatus taught by Erdman to detect a stall condition as taught by Makaran. The advantage of this would be motor protection.

5. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Makaran as applied to claim 18 above, and further in view of Buthker (US 5,949,203).

Claim 19: Makaran teaches the limitations of claim 18. Referring to claim 19, Makaran does not teach rectifying the signals prior to integration. Buthker teaches rectifying signals prior to integration (Col. 7: 59-8:1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus taught by Makaran to rectify the signals before integration as taught by Buthker. The advantage of this would be a signal with less jitter.

Claim 20: Makaran and Buthker teach the limitations of claim 19. Referring to claim 20, Buthker teaches masking an initial portion of the emf signals (Col. 8:28-33).

7. Claims 2-5 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erdman et al and Makaran as applied to claim 1 and 9 above, and further in view of Buthker (US 5,949,203).

Claims 2 and 10: Erdman et al and Makaran teach the limitations of claims 1 and 9. Referring to claims 2 and 10, they do not teach the signals are of alternating polarity. Buthker teaches emf signals of alternating polarity (Col. 7: 49-63). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus taught by Erdman et al and Makaran to have signals of alternating polarity as taught by Buthker. The advantage of this would be the ability to measure the position of the rotor.

Claims 3 and 11: Erdman et al, Makaran, and Buthker teach the limitations of claims 2 and 10. Referring to claims 3 and 11, Buthker teaches a rectifying circuit (Fig.

1: 40) coupled to an integrator (Fig. 1: 42) for rectifying signals prior to integration (Col. 7: 59-8:1).

Claims 4 and 12: Erdman et al, Makaran, and Buthker teach the limitations of claims 3 and 10. Referring to claims 4 and 12, Buthker teaches a masking circuit (Fig. 1: 76) masking an initial portion of the emf signals (Col. 8:28-33).

Claim 5: Erdman et al, Makaran, and Buthker teach the limitations of claim 4. Referring to claim 5, Buthker teaches a control circuit (Fig. 1: 48) coupled to the current generator (Fig. 1: 18) and to the rectifying circuit (Fig. 1: 40).

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Erdman et al in view of Makaran and Gutierrez (U.S. 6,014,000).

Claim 14: Erdman et al teach an apparatus for detecting a stall condition of a motor (Fig. 1:12) of the type which includes at least first and second coils and a rotor having a plurality of magnetic poles, said apparatus comprising; a generator (Fig. 1: 14) for alternately supplying drive currents to said first and second coils causing the rotor to step, each of said first and second coils generating signals when transitioning from a driven state to a non-driven state, said signals resulting from motion of said rotor; an integrator (Fig. 1:30) having an input coupled to receive said signals and for generating an integrated version thereof; and a comparator (Fig. 1: 36) coupled to said integrator (Fig. 1: 30) for comparing said integrated version with a predetermined threshold (Fig. 1:40). Erdman does not teach comparing the integrated version with a threshold to

detect the stall condition, and a display actuator coupled to the rotor for movement by the rotor to reflect a measure of a variable.

Makaran teaches inputting signals into an integrator, and comparing an integrates version of the signals with a threshold to detect a stall condition (Col. 10:45-65). Gutierrez teaches a display actuator coupled to the rotor for movement by the rotor to reflect a measure of a variable (e.g. Fig. 1: 116). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the apparatus taught by Erdman et al to include the teachings of Makaran and Gutierrez. The advantage of this would be motor protection and the ability to alert a user of the apparatus that a stall condition has occurred.

Claim 17: Erdman et al, Makaran, and Gutierrez teach the limitations of claim 14. Referring to claim 17, Erdman teach a comparator (36) coupled to an integrator (30). Makaran teach comparing an integrated version with a predetermined threshold to detect the stall condition (Col. 10:45-65).

9. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erdman et al and Gutierrez as applied to claim 14 above, and further in view of Buthker.

Claim 15: Erdman et al, Makaran, and Gutierrez teach the limitations of claim 14. Referring to claim 15, they do not teach the signals are of alternating polarity and means coupled to the integrator for correcting the polarity. Buthker teaches emf signals of alternating polarity (Col. 7: 49-63) and a rectifying circuit (Fig. 1: 40) coupled to an

integrator (Fig. 1: 42) for rectifying signals prior to integration (Col. 7: 59-8:1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus taught by Erdman et al, Makaran, and Gutierrez to include the teachings of Buthker. The advantage of this would be the ability to measure the position of the rotor.

Claim 16: Erdman et al, Makaran, Gutierrez and Buthker teach the limitations of claim 15. Referring to claim 16, Buthker teaches a masking circuit (Fig. 1: 76) masking an initial portion of the emf signals (Col. 8:28-33).

Allowable Subject Matter

10. Claims 6-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

11. Applicant's arguments, filed 27 April 2004, with respect to claims 1-20 have been fully considered and are persuasive. The final rejection of 09 March 2004 has been withdrawn.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. They are: Muller (US 4,119,895), Erdman et al (US 5,023,527),

King et al (US 6,586,898), Plunkett (US 4,928,043), Alley et al (US 4,250,435), Schroeder (US 6,236,183), Young et al (US 5,017,846), and Sriram (US 5,739,652).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Renata McCloud whose telephone number is (571) 272-2069. The examiner can normally be reached on Mon.- Fri. from 8 am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on (571) 272-2800 ext. 4. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Renata McCloud
Examiner
Art Unit 2837

RDM

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